

REMARKS

This amendment is in response to the Office Action mailed April 23, 2004. Claims 1- 17, 19-21, 25-35 and 37-39 were outstanding in the Office Action. Claims 1-3, 6-8, 14, 15, 19-21, 23, 25, 28, 32-35 and 37-39 were rejected in view of the prior art. Claims 4, 5, 9-13, 16, 17 and 29-31 were indicated as being allowable over the art of record but objected to for being dependent on a rejected claim. Claims 2, 7, 10-12, 14-17, 19-21, 23, 26-35, and 37-39 have been canceled in this amendment. Claims 1, 3-6, 8, 9, 13 and 25 remain in this application. Claim 1 has been amended to include the limitations of claims 2 and 10-12, and to specify the insert has a trio of symmetrical lobes. New matter is not added to this application by this amendment. Support for the amendments can be found in the specification on page 5, lines 10-26; Fig. 1; in claim 2 and claims 10-12 as originally filed; and in the figures. Claim 4 has been amended to claim the angles of orientation of the upper step and lower step leading cutting edges. New matter is not added to the application by this amendment. Support for this amendment is found in the specification at page 6, lines 25-31. Claim 5 has been amended to depend from claim 1 and to clarify the claim language. Claim 8 has been amended to clarify the claim language. Claim 13 has been amended to depend from claim 1 and to specifically claim the upper step, transition portion and lower step cutting edge surface relief angle ranges. New matter is not added to this application by this amendment. Support for the amendments can be found in the specification on page 6, lines 7-11. Claim 25 has been amended to depend from claim 1 and to claim applicants' invention with more specificity. New matter is not added to the application by these amendments.

Applicants wish to extend their appreciation to the Examiner for indicating that the claims contain allowable subject matter. Applicants respectfully request that the above-identified application be reconsidered in view of the above amendments and remarks, which follow, and that each of the presently pending claims 1, 3-6, 8, 9, 13 and 25 be allowed and the application be passed to issue.

Claim Objections

Claim 23 was objected to because of an informality. Claim 23 has been cancelled rendering this objection moot.

35 USC §102 (e) Rejection – Hauptmann et al. (US 2001/0013429 and
US 2001/0013430)

Claims 1-3, 19, 23, 25-27, 32, 33, and 37 stand rejected under 35 USC §102(e) as being anticipated by Hauptmann et al. (US 2001/0013429 and US 2001/0013430).

Claims 2, 7, 10-12, 14-17, 19-21, 23, 26-35, and 37-39 have been canceled rendering their rejection moot.

Hauptmann et al. (US 2001/0013429 and US 2001/0013430) disclose a solid hard metal head for a drill including two main cutting edges arranged substantially diametrically opposite each other, and two auxiliary cutting edges likewise arranged substantially diametrically opposite each other, with associated main cutting edge and auxiliary cutting edge forming an acute angle therebetween, and with the auxiliary cutting edges being arranged, with respect to the rotational direction of the drill, in front of the respective, associated therewith, main cutting edges (see Hauptmann et al., at page 2, paragraph 0015). The main cutting edges end at the tip of the head, at a chisel edge (see Hauptmann et al., at page 2, paragraph 0018). The main cutting edge 2 and the auxiliary cutting edge 3 of Hauptmann et al. have concave shapes in the axial direction (see Hauptmann et al., at page 3, paragraphs 0029 and 0030).

Claim 1 of Applicants' application has been amended to specifically claim a rotary drill bit for penetrating earth strata. The drill bit comprises an elongate bit body having an axial forward end. A monolithic hard insert is affixed to the bit body at the axial forward end thereof. The hard insert has a trio of symmetric lobes, each lobe having a discrete stepped leading cutting edge, each stepped leading cutting edge having a straight upper step, a transition portion connected to the upper step and a straight lower step connected to the transition portion. The upper step of the leading cutting edge has an upper leading surface. The upper leading surface is disposed at a rake angle with the vertical of between about five degrees to about negative fifteen degrees. The lower step and the transition portion of the leading cutting edge has a lower leading surface disposed at a rake angle with the vertical of between about zero degrees to about negative ten degrees.

Applicants respectfully submit that prior art is anticipatory only if every element of the claimed invention is disclosed in a single item of prior art in the form literally defined in the claims. Applicants respectfully contend that Hauptmann et al. does not

disclose a drill bit comprising an elongate bit body having an axial forward end, and a monolithic hard insert being affixed to the bit body at the axial forward end thereof wherein the hard insert has a trio of symmetrical lobes, each said lobe having discrete leading cutting edges for cutting the earth strata, wherein each leading cutting edges has a straight upper step, a transition portion connected to said upper step and a straight lower step connected to said transition portion as is claimed by the applicants. Therefore, Applicants submit that Hauptmann et al. cannot anticipate claim 1 under 35 USC §102(e). The remaining claims, as amended, depend from claim 1. Applicants therefore contend that claims 3-6, 8, 9, 13 and 25 are also not anticipated by Hauptmann et al.

Accordingly Applicants respectfully request that the rejection of claims 1, 3-6, 8, 9, 13 and 25 under 35 USC §102(e) as being as being anticipated by Hauptmann et al. (US 2001/0013429 and US 2001/0013430), be withdrawn and that claims 1, 3-6, 8, 9, 13 and 25 be allowed.

35 USC §103 (a) Rejection – Weaver et al. (US 2,894,726) in view of
Stockard, Jr. (US 3,132,708)

Claims 1-3, 6-8, 14, 15, 19-21, 23, 25-28, 32-35 and 37-39 were rejected under 35 USC §103(a) as being unpatentable over Weaver et al. in view of Stockard, Jr. Claims 2, 7, 10-12, 14-17, 19-21, 23, 26-35, and 37-39 have been cancelled rendering their rejection moot.

Weaver et al. teaches earth-boring drag blade bits (see Weaver et al. at column 1, lines 15-17). Three identically shaped blades are utilized in the blade bit assembly. Each blade comprises in general, an upper shank end to which the bit body and collars are attached and a lower cutting end. The blade may be drop-forged in a single piece so that the cutting end presents a substantially planar leading surface 21 having its lower edge recessed, for the reception of a plurality of inserts of a hard material such as tungsten carbide or the like (see Weaver et al., at column 2, line 70, through column 3, line 10, and Figs.1 and 2). Weaver et al. does not teach that the substantially planar leading surface 21 has a specific rake angle. The Weaver et al. figures suggest that substantially planar leading surface 21 has a vertical orientation (a zero rake angle). Weaver et al. also does not teach or suggest bit having non-planar leading surface or plurality of leading surfaces having a plurality of rake angles.

Stockard, Jr. teaches detachable blade drilling bits for use in drilling earth formations (see Stockard, Jr. at column 1, lines 10-13). Although the drill bit illustrated in the Stockard, Jr. figures utilizes three blades, Stockard, Jr. teaches that any number of blades may be used (see Stockard, Jr. at column 3, lines 8-11). Stockard, Jr. teaches blades that are identical in configuration and that are provided with substantially planar front or cutting surfaces 36 which terminate in a plurality of stepped cutting edges 38 (see Stockard, Jr. at column 3, lines 16-20, and 54-61). Stockard, Jr. does not teach that substantially planar front or cutting surfaces 36 has a specific rake angle. The Stockard, Jr. figures suggest that substantially planar front or cutting surfaces 36 has a vertical orientation (a zero rake angle). Stockard, Jr. also does not teach or suggest non-planar leading surface or plurality of leading surfaces having a plurality of rake angles.

Applicants respectfully point out that the MPEP §706.02(j) notes as follows:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on Applicant's disclosure.

Applicants' claim 1 now includes the limitation of claims 10 and 11, which the Examiner has indicated were allowable. Claim 1 specifically claims a rotary drill bit for penetrating earth strata. The drill bit comprises an elongate bit body having an axial forward end. A monolithic hard insert is affixed to the bit body at the axial forward end thereof. The hard insert has a trio of symmetric lobes, each lobe having a discrete stepped leading cutting edge, each stepped leading cutting edge having a straight upper step, a transition portion connected to the upper step and a straight lower step connected to the transition portion. The upper step of the leading cutting edge is attached to an upper leading surface. The upper leading surface is disposed at a rake angle with the vertical of between about five degrees to about negative fifteen degrees. The lower step and the transition portion of the leading cutting edge is attached to a lower leading surface disposed at a rake angle with the vertical of between about zero degrees to about negative ten degrees.

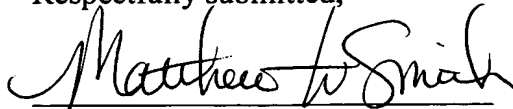
Applicants respectfully submit that Weaver et al. and Stockard, Jr. do not teach or suggest a drill bit having a leading cutting edge that has a plurality of leading surfaces which are disposed at different rake angles. Therefore, applicants contend that neither patent provides a motivation to modify the Weaver et al. or Stockard, Jr. bits to have a leading cutting edge that has a plurality of leading surfaces which are disposed at different rake angles. Thus, combining the teachings and suggestions of Weaver et al. with the teachings and suggestions of Stockard, Jr. would not have rendered applicants' invention as now claimed obvious to the skilled artisan. Accordingly, applicants respectfully request that the rejection of claims 1, 3-9, 13 and 25 under 35 USC §103(a) as being unpatentable over Weaver et al. in view of Stockard, Jr., be withdrawn and that claims 1, 3-9, 13 and 25 be allowed.

In view of the above amendments and comments, it is believed that claims 1, 3-9, 13 and 25 are patentable over the art of record. Thus, applicants respectfully request a Notice of Allowance indicating claims 1, 3-9, 13 and 25 are allowable. The applicants respectfully submit that they have made a thorough, diligent and sincere effort to advance the prosecution of this application and respectfully believe that all rejections have been overcome. If for any reason the Examiner does not believe that the application is in condition for allowance, the Examiner is requested to telephone applicants with any comments or questions (724-539-3848) in order to expedite prosecution of the application.

Applicants hereby petition for an extension of time of one month, until August 23, 2004.

The Commissioner is hereby authorized to charge any fees in connection with this submission, including the fee for the extension of time, to Kennametal Inc.-AMSG corporate Deposit Account No. 502832.

Respectfully submitted,



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